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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,801	06/20/2003	Kenneth G. Brown	LAR 15712-2-CU	8170

23351 7590 03/28/2005

NATIONAL AERONAUTICS AND SPACE ADMINISTR
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EXAMINER	
SODERQUIST, ARLEN	

ART UNIT	PAPER NUMBER
1743	

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/601,801	BROWN ET AL.	
	Examiner	Art Unit	
	Arlen Soderquist	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-18 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-18 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 20 June 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 12-17-04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The disclosure is objected to because of the following informalities: the status of the parent application needs to be updated.

Appropriate correction is required.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3, 10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Timoshenko (US 4,164,699). In the patent Timoshenko teaches a thermochemical combustible gas detector having a resistor bridge including a thermistor which is sensitive to combustible gases and a thermistor which compensates the effects of unmeasured parameters and components upon the former thermistor. The proposed thermochemical combustible gas detector comprises a resistor bridge (1) shown in figure 1. Two adjacent arms of said resistor bridge include thermistors (2,3). One thermistor (2), is sensitive to the presence of combustible gases in the atmosphere, whereas the other thermistor (3) is intended to compensate for the effects of unmeasured parameters and components of the atmosphere upon the sensitive thermistor. The two remaining adjacent arms of said bridge include conventional resistors (4,5). The sensitive thermistor may be a coil, preferably of platinum wire, which at a certain temperatures acts as a catalyst for combustible gases and vapors. The compensating thermistor is also a platinum wire coil. In order to avoid the catalytic action of this thermistor, it is coated with a catalytically inert compound. The same effect can be attained by making this thermistor from thick wire in order to reduce its temperature to a point at which platinum is inert, or by using a greater winding pitch in this thermistor compared to that of the sensitive thermistor. In order to bring down the working temperature of the sensitive thermistor and prolong its service life, the thermistor can be coated with a thin film of a catalytically active compound, which accounts for a lower oxidation temperature of combustible gases, as compared to platinum. In this case the compensating thermistor needs no coating. An alternative embodiment for the thermistors is platinum coils arranged either inside or on the surface of cylinders of a porous material, preferably active aluminum oxide. The coils can also be arranged in spherical granules of the same porous

material. In order to ensure catalytic activity of the sensitive thermistor, it is treated with a catalytic compound.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 2, 4-9, 11, and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Timoshenko as applied to claims 1, 3, 10and 12 above, and further in view of McNally (US 4,313,907) or Wind (US 5,804,703). Timoshenko does not teach any particular type of catalyst or the resistance of the thermistors.

In the patent McNally teaches a combustible gas detection apparatus that is substantially similar to Timoshenko. Column 1, lines 9-51 teach that combustible gases are an ever present danger that need to be sensed. These combustible gases include a myriad of different chemical compounds, for example aliphatic hydrocarbons such as methane, aromatic hydrocarbons such as benzene, alcohols such as methanol, esters such as butyl acetate, ethers such as ethylene oxide, and mixtures such as gasoline. Column 1, lines 52-60 teach a catalyst made of palladium, palladium oxide and nickel oxide as a catalyst for use in a detector employing a catalyzed sensitive element and an uncatalyzed element for measuring combustible gases.

In the patent Wind teaches a circuit for a combustible gas sensor that is substantially similar to the Timoshenko device. Column 2 lines 42-48 teach that sensing compounds in the exhaust path of an internal combustion engine, a catalyst (22) used by the sensor may be any noble metal or other material such as platinum, palladium, rhodium, etc. or combinations of such

materials capable of stimulating reactions between unburned or partially burnt hydrocarbons and oxygen in the engine exhaust gases.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the known catalysts of McNally or Wind in the Timoshenko method because of their known sensitivity to combustible gases as shown by McNally and Wind. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a thermistor resistance optimal for the sensing environment because as held by the Court the discovery of an optimum value of a known result effective variable without producing any new or unexpected results is within the skill of the routineer in the art (*In re Boesch*, 205 USPQ 215 (CCPA 1980)) and the selection of a known material based on its suitability for the intended use is within the skill of a routineer in the art (*In re Leshin*, 125 USPQ 416 (CCPA 1960)).

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additionally cited art relates to gas sensors and the types of materials that can be used as thermistors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is 571-272-1265. The examiner can normally be reached on Mon-Thu and Alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Arlen Soderquist

ARLEN SODERQUIST
PRIMARY EXAMINER